EDITORIALS

'Hired Guns' in Court

FOR BOTH DOCTORS and lawyers their professional expertise is their stock in trade. They sell it in exchange for professional fees, offer it in return for a retainer or salary, or sometimes contribute it gratis to some worthy cause. But the expertise is quite different for a doctor and for a lawyer. Each discipline has a very different frame of reference and each has a very different approach to getting at the truth. Since courts are the turf of lawyers it is not unusual for doctors, whether wittingly or otherwise, to find themselves and their medical expertise being used as instruments of the legal expertise of the lawyers. Because each discipline tends to seek truth and recognize it differently, the whole truth as seen by the doctor may be eluded or evaded by the manipulations of expert lawyers in behalf of either plaintiff or defendant or both.

The Specialty Conference elsewhere in this issue draws attention to the role of an expert medical witness in court. The term "hired guns" is used to describe qualified expert medical witnesses who will give expert testimony to support the cause of the plaintiff or defendant as the case may be, and for a fee or not as the case may be. And too often there is a disquieting spectacle of a number of qualified medical experts giving quite different opinions based upon what appears to be much the same information. While all of this is cricket as the game is played in the adversary framework of a trial in court, often it seems to fall somewhat short of presenting the judge or jury with all the medical information needed, in a way which will help them to make the fairest and most correct decision.

One cannot help but be reminded of the quite recently established legal doctrine of informed consent. Here the decision maker is the patient, rather than a judge or jury, and the doctrine calls upon the physician to fully inform the patient of all the medical options, and of the pros and cons of each, so that he or she may make a fully informed decision. A parallel to the decision makers in a court trial seems obvious. The role of the expert medical witness should be less that of a "hired gun" for the plaintiff or defendant, and more that of a physician with the professional expertise to present to the court the current state of the art and science of medicine with respect to the problem at hand. This having been done, the court would then be in a position to make a truly informed decision much as a patient should be able to under the doctrine of informed consent.

Could it be that the time has come to apply the basic principle of full disclosure of the current state of the art and science of medicine (which underlies the concept of informed consent) to the role of the expert medical witness in a court of law? If this were done the truth, as it is understood in the discipline of medicine with respect to any given issue, could be more fully and accurately presented within the adversary framework of a courtroom trial, including full disclosure where there is difference of opinion—and the need for "hired guns" in court might actually become a relic of the past.

—MSMW

Clostridium difficile: A New Enteric Pathogen

ELSEWHERE IN THIS ISSUE, W. Lance George has nicely summarized recent data implicating *Clostridium difficile* as the cause of antibiotic-associated pseudomembranous colitis (PMC). PMC is regarded as an infrequent but serious adverse drug reaction, and has been studied extensively for more than three decades. Earlier work sug-

gested that *Staphylococcus aureus* was responsible. However, a critical review of the data indicates that either the role of this microbe was poorly documented or the disease reported at that time was different than PMC as it is encountered today.

How did this pathogen escape detection until the recent flurry of reports provided compelling evidence and confirmatory observations? The most plausible explanation is that fecal flora is simply too complex to detect a unique component unless there are clues to suggest specific microbes. Therefore, initial studies were done in animals with the objective of identifying a transferable toxin neutralized by clostridial antitoxins. This permitted a focus of attention on clostridia and led to the identification of *C difficile* as the cause of antibiotic-induced colitis. The first clinical application of the data from the studies in animals appears to have been in June 1977, when tests of stool specimens from a patient with lethal PMC showed the presence of both *C difficile* and its cytotoxin.

Subsequent studies have dealt with the incidence of this microbe and its toxin in stool specimens from additional patients, including various control subjects. Several important observations have emerged, based on data from several different laboratories. First, tissue cultures from nearly all patients with antibiotic-associated PMC have a cytopathic toxin that is neutralized by *C sordellii* antitoxin. The incidence of the toxin in patients with antibiotic-associated diarrhea, and in whom either symptoms are minor or there are no abnormalities shown on endoscopic examination, is approximately 20 percent. A common mechanism, therefore, is implicated in the entire spectrum of diarrheal complications ascribed to antimicrobials, although in many patients with less serious forms of the disease other causes seem to be involved. A second important observation from this subsequent work is that the role of *C difficile* as an enteric pathogen is limited almost exclusively to the presence of antimicrobial exposure. Available evidence indicates that *C difficile* plays no established role in other diarrheal conditions such as idiopathic inflammatory bowel disease, irritable bowel syndrome, ischemic colitis or neonatal necrotizing enterocolitis.

Another issue concerns the evidence that *C difficile* is responsible for the cytotoxin found in specimens of stool. As noted by George, the fact that *C sordellii* antitoxin neutralizes this cytotoxin initially suggested the presence of an alternative agent. However, *C sordellii* was not found with stool cultures, it failed to reproduce the colonic lesion with intracecal injection in animals, and in vitro studies with test strains did not show typical cytopathic changes in tissue culture. By contrast, *C difficile* satisfies all these criteria. Especially important was the observation that the cytotoxin produced by *C difficile* is neutralized by *C sordellii* antitoxin, indicating antigenic cross-reactivity. Studies to detect other clostridial species that produce an antigenically related cytotoxin have been unrewarding. These findings, coupled with stool culture results, suggest that detection of this cytotoxin is virtually diagnostic for the presence of *C difficile*.

The identification of a bacterial pathogen led to therapeutic trials using orally given vancomycin. This agent was attractive theoretically because it is active against virtually all strains of *C difficile*, there is minimal absorption so that levels in the colon are extremely high and there is essentially no reported toxicity with oral administration. The first trials, reported in 1978, showed that in nearly all patients there was a prompt and often dramatic response to treatment. Therefore, within 18 months the cause of PMC had been clarified, a sensitive and specific tissue culture assay to detect *C difficile* cytotoxin had been developed, and clinical trials had been done that established the efficacy of treatment with orally given vancomycin. Despite this progress, several practical facets of the problem require further study.

It should be emphasized that *C difficile* and its cytotoxin have been implicated in most or all cases of PMC. However, other mechanisms must be involved in many patients with antibiotic-associated diarrhea, including some who have serious forms of colitis or debilitating diarrhea without pseudomembrane formation. What approach should be taken, then, when it appears a patient may have *C difficile*-induced enteric disease? The first point to emphasize is recognition. The diagnosis should be considered whenever diarrhea develops in a patient either during or up to four weeks after administration of antibiotics. The role of endoscopy in evaluation is somewhat enigmatic. This procedure has revolutionized anatomical studies of the colon, as well as knowledge about diarrheal complications of antimicrobials. However, it is expensive and unpleasant. Moreover, sigmoidoscopy fails to detect rare cases in which lesions are restricted to the right colon, typical plaques

may be easily overlooked unless special precautions are taken and *C difficile* may be responsible for diarrhea even in the absence of demonstrable pseudomembranes. It is my impression that the tissue culture assay of stool is more important because it provides a causative mechanism which can be used as a rationale for therapeutic decisions regardless of pathological changes. Unfortunately, most clinical laboratories do not carry out tissue cultures, and there are only a small number of laboratories with tissue culture facilities that routinely do the test required to detect *C difficile* cytotoxin.

An alternative approach is testing stool specimens for fecal leukocytes, which are noted in most cases of *C difficile*-induced disease, although this finding is nonspecific. Gram stains are unlikely to be revealing because quantitative cultures indicate that the responsible pathogen usually accounts for a relatively small fraction of the flora that can be cultivated. Few laboratories are prepared to culture stool for *C difficile,* and detection of toxin is considered far more specific. Because the toxin has now been purified, it is likely that immunologic assays, which are more practical for routine laboratory use, will be forthcoming. In the meanwhile, most practicing physicians are forced either to rely on endoscopic studies and certain empiric decisions, or to resort to tissue cultures at a reference laboratory which may be some distance away.

Another question in management concerns indications for choosing a specific form of therapy—either administration of vancomycin to inhibit the pathogen or cholestyramine to bind the toxin. Experience has taught that in many patients with mild disease there will be spontaneous resolution of symptoms if the implicated drug is simply discontinued. The most clearly defined indications for therapy are persistent diarrhea or severe symptoms. Cholestyramine has the advantage of being relatively cheap and having documented efficacy, although collective experience shows that it is not as predictably effective as vancomycin. Vancomycin has the disadvantage of excessive cost and a recently recognized problem of permitting relapse. An assessment of our experience with 90 patients treated with orally given vancomycin showed there was good response in nearly all; however, in 19 percent diarrhea recurred with vancomycin-sensitive strains of *C difficile* after therapy was discontinued. The presumed mechanism for relapse is failure to eradicate *C difficile* due to sporulation. Other antimicrobials are attractive because of their more reasonable cost and in vitro activity against the pathogen. However, it is unlikely that they will obviate the problem of relapse, and none have established efficacy.

A final comment regarding management concerns epidemiologic aspects of the disease. Outbreaks of antibiotic-associated PMC have been observed in patients in hospital—a good example being the alarming incidence of *C difficile*-induced colitis on two wards of a hospital in Birmingham, England. *C difficile* in an individual case may come from the host's own colonic microflora, or it may be acquired from an extraneous source during antibiotic exposure. Clustering of cases suggests that the latter mechanism applies in some instances, and supports the concept that the pathogen is transferable. This emphasizes the importance of enteric precautions and care in keeping endoscopic instruments sterile.

The data summarized by George provide compelling evidence that *C difficile* is the major and possibly the exclusive cause of PMC. The detection of a microbial pathogen and subsequent therapeutic trials have justified the apparent paradox of antimicrobial treatment for an antibiotic complication. There remain nuances of the disease that pose problems to physicians, such as possible relapses, the cost of treatment and the logistics of having diagnostic tests carried out. Nevertheless, it appears that this dreaded iatrogenic complication is well on the way to being conquered.

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Will It Be Babble, Babel or Clarity of Language?

AN EDITOR of a professional journal of medicine feels compelled to comment when the subject "Babel in Medicine" is raised, as happens in a special communication appearing in this issue. This journal strives for literacy in the face of what often seem to be heavy odds. It tries to avoid ungrammatical constructs and professional jargon wherever possible, and to publish copy that is readily understandable to doctors of medicine and anyone else who reads and comprehends English.

English, when spoken and written correctly, is